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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,133	11/25/2003	Koichiro Yomogida	5616-0078	6348

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EXAMINER	
TRAN, BINH Q	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/721,133	YOMOGIDA ET AL.	
	Examiner	Art Unit	
	BINH Q. TRAN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-3 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/25/2003.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Receipt and entry of Applicant's Preliminary Amendment dated May 12, 2004 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-3 are rejected under 35 U.S.C. 102 (e) as being anticipated by Kawashima et al. (Kawashima) (Patent Number 6,851,258).

Regarding claim 1, Kawashima discloses a fuel injection control device of an internal combustion engine (1) comprising: an exhaust purification device (41) located at an exhaust passage of an internal combustion engine for purifying an exhaust gas by catalytic action; exhaust gas temperature determination means (e.g. 37, 38) for detecting or computing temperature of the exhaust gas passing through the exhaust purification device (41); determining means (31) for determining an amount and a timing of basic fuel injection based on operational status such as a load and a rotational speed of the internal combustion engine (e.g. See col. 11, lines 62-67; col. 12, lines 1-15; col. 14, lines 7-30); and control means (31) for controlling an

amount and a timing of a fuel injection by a fuel injector (17) of the internal combustion engine, wherein the control means controls the amount and the timing of the fuel injection to make them respectively equal to the amount of the basic fuel injection and the timing of the basic fuel injection timing when the detected or computed exhaust gas temperature is at or above a catalytic activation temperature of the exhaust purification device (e.g. See col. 13, lines 22-67; col. 14, lines 1-56), and the control means raises the exhaust gas temperature by retarding the timing of the fuel injection timing from the timing of the basic fuel injection (e.g. See col. 13, lines 22-67; col. 14, lines 1-5), and also increases the amount of the fuel injection from the amount of the basic fuel injection in order to compensate for a drop in a torque output of the internal combustion engine which is caused by retarding the timing of the fuel injection when the detected or computed exhaust gas temperature is lower than the catalytic activation temperature of the exhaust purification device (e.g. See col. 14, lines 14-67; col. 15, lines 1-42).

Regarding claim 2, Kawashima further discloses that the control means determines retardation period from the timing of the basic fuel injection based on the load and the rotational speed of the internal combustion engine and determines the increased amount of the fuel injection based on the load and the rotational speed of the internal combustion engine (e.g. See col. 13, lines 22-67; col. 14, lines 1-56).

Regarding claim 3, Kawashima further discloses a relationship between the retardation period and the load and the rotational speed of the internal combustion engine and the relationship between fuel injection and the load and the rotational speed of the internal combustion engine are stored into the control means in the form of maps, and the control means

controls the timing of the fuel injection and the increased amount of fuel injection according to the maps (e.g. See col. 14, lines 14-67; col. 15, lines 1-42).

Claims 1-3 are rejected under 35 U.S.C. 102 (e) as being anticipated by Ito et al. (Ito) (Patent Number 6,378,297).

Regarding claim 1, Ito discloses a fuel injection control device of an internal combustion engine (1) comprising: an exhaust purification device (22) located at an exhaust passage of an internal combustion engine for purifying an exhaust gas by catalytic action; exhaust gas temperature determination means (e.g. 39) for detecting or computing temperature of the exhaust gas passing through the exhaust purification device (22); determining means (30) for determining an amount and a timing of basic fuel injection based on operational status such as a load and a rotational speed of the internal combustion engine (e.g. See col. 3, lines 59-67; col. 4, lines 1-57); and control means (30) for controlling an amount and a timing of a fuel injection by a fuel injector (6) of the internal combustion engine, wherein the control means controls the amount and the timing of the fuel injection to make them respectively equal to the amount of the basic fuel injection and the timing of the basic fuel injection timing when the detected or computed exhaust gas temperature is at or above a catalytic activation temperature of the exhaust purification device (e.g. See col. 7, lines 12-67; col. 8, lines 1-65), and the control means raises the exhaust gas temperature by retarding the timing of the fuel injection timing from the timing of the basic fuel injection (e.g. See col. 7, lines 12-67; col. 8, lines 1-65), and also increases the amount of the fuel injection from the amount of the basic fuel injection in order to compensate for a drop in a torque output of the internal combustion engine which is caused by retarding the

timing of the fuel injection when the detected or computed exhaust gas temperature is lower than the catalytic activation temperature of the exhaust purification device (e.g. See col. 11, lines 9-67; col. 12, lines 1-42; col. 13, lines 1-16).

Regarding claim 2, Ito further discloses that the control means determines retardation period from the timing of the basic fuel injection based on the load and the rotational speed of the internal combustion engine and determines the increased amount of the fuel injection based on the load and the rotational speed of the internal combustion engine (e.g. See col. 11, lines 9-67; col. 12, lines 1-42; col. 13, lines 1-16).

Regarding claim 3, Ito further discloses a relationship between the retardation period and the load and the rotational speed of the internal combustion engine and the relationship between fuel injection and the load and the rotational speed of the internal combustion engine are stored into the control means in the form of maps, and the control means controls the timing of the fuel injection and the increased amount of fuel injection according to the maps (e.g. See col. 11, lines 9-67; col. 12, lines 1-42; col. 13, lines 1-16).

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of four patents:

Nishimura et al. (Pat. No. 6560960), Yamashita et al. (Pat. No. 6725649), Iihoshi et al. (Pat. No. 6865880), and Nishimura et al. (Pat. No. 6345499) all discloses an exhaust gas purification for use with an internal combustion engine.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
April 28, 2005

Binh Q. Tran
Patent Examiner
Art Unit 3748